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SPECIFICATION FOR SILICEOUS FIRECLAY REFRACTORIES

(First Revision)

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NEW DELHI 110002

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May 1985

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SPECIFICATION FOR SILICEOUS FIRECLAY REFRACTORIES

(First Revision)

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Indian Standard

SPECIFICATION FOR SILICEOUS FIRECLAY REFRACTORIES

(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 6 August 1984, after the draft finalized by the Refractories Sectional Committee had been approved by the Structural and Metals Division Council.

0.2 This standard was first published in 1963 with a view to making the best use of raw material available in some areas of the country. This has now been revised on the basis of the experience gained in the usage of such refractories and in this revision some of the requirements have been modified.

0.3 Fireclay refractories made out of siliceous clays available in some areas have low PCE value but high refractoriness under load The permanent linear change is also comparatively less and such refractories, in fact, show a tendency towards expansion on reheating. This characteristic has been found to be useful for the good performance of such refractories as bottom pouring sets, because it helps in maintaining tight joints. These refractories have also found acceptance as general purpose bricks for use in boilers of sugar mills.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers the requirements for siliceous fireclay refractories for general purposes. It relates to burnt refractory bricks and shapes.

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*Rules for rounding off numerical values (*revised*).

2. SUPPLY OF MATERIAL

2.1 General requirements for the supply of material shall be as laid down in IS : 1387-1967*.

2.2 The refractories shall be made from siliceous fireclays and shall be compact, of homogeneous texture and free from cracks, voids and other flaws. They shall be burnt evenly throughout, and shall have sufficient mechanical strength and no soft corners.

3. CHEMICAL COMPOSITION

3.1 The alumina (including titania) and silica contents of the siliceous fireclay refractories, when determined in accordance with the methods given in IS : 1527-1972† or IS : 1335-1979‡ shall be as follows:

Alumina (Al_2O_3) + Titania (TiO_2), *Max*	30 percent
Silica (SiO_2), *Min*	65 percent

4. SAMPLING

4.1 Representative samples shall be drawn according to the scheme of sampling given in IS : 1528 (Part 7)-1974§.

5. SIZES AND TOLERANCES

5.1 Sizes and shapes of the bricks shall conform to IS : 1526-1960||.

5.2 Variations from specified dimensions, covering both warpage and shrinkage shall be allowed to the extent of ± 2 percent or ± 1 mm, whichever is greater (*see* Fig. 1).

6. PHYSICAL TEST REQUIREMENTS

6.1 The siliceous fireclay refractories, when tested in accordance with the test methods specified shall conform to the requirements given in Table 1.

7. MARKING

7.1 The refractories shall be clearly marked with the manufacturer's name or trade-mark.

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*General requirements for the supply of matallurgical materials (*first revision*).

†Methods for chemical analysis of high silica refractory materials (*first revision*).

‡Method for direct determination of alumina in refractory materials (*first revision*).

§Methods of sampling and physical tests for refractory materials: Part 7 Methods of sampling and criteria for conformity (*first revision*).

||Sizes and shapes for firebricks (230 mm series).

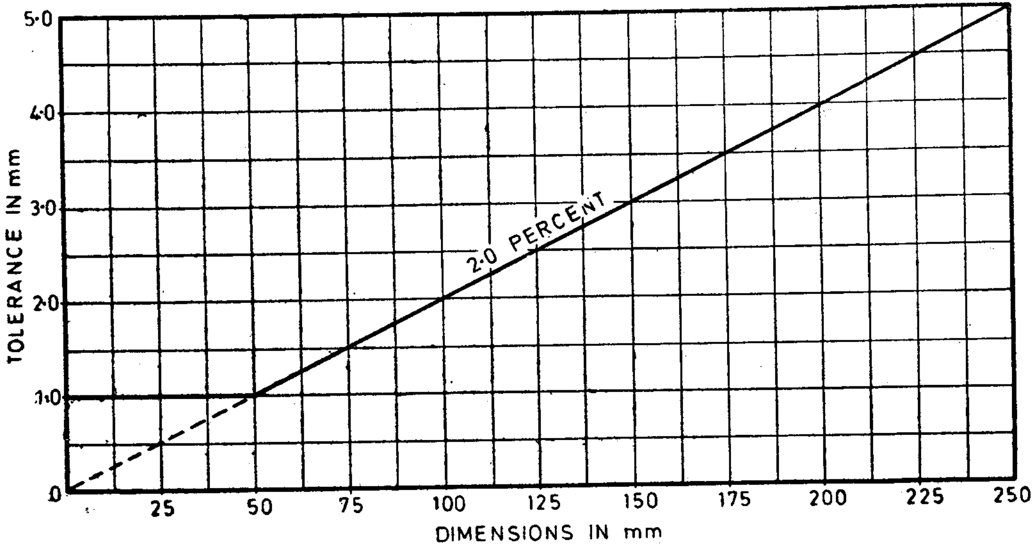

FIG. 1 TOLERANCE ON SIZE OF SILICEOUS FIRECLAY REFRACTORIES

TABLE 1 PHYSICAL TEST REQUIREMENTS

(*Clause* 6.1)

SL No.	CHARACTERISTICS	REQUIREMENTS	TEST METHODS (REFERENCE TO INDIAN STANDARD)
i)	Pyrometric-cone equivalent (softening point), ASTM Code No., *Min*	28	IS : 1528 (Part 1)-1980*
ii)	Refractories under lead (ta)°C, *Min*	1 400	IS : 1528 (Part 2)-1974†
iii)	Apparent porosity, percent, *Max*	25	IS : 1528 (Part 8)-1974‡
iv)	Cold crushing strength, MPa, *Min* (Not applicable for hollowares)	20	IS : 1528 (Part 4)-1974§
v)	Permanent linear change after reheating for 5 h at 1 400 ± 20°C, percent, *Max*	± 0·5	IS : 1528 (Part 6)-1974‖

NOTE — 1 MPa = 10·2 kgf/cm^2.

Methods of sampling and physical tests for refractory materials:

*Part 1 Determination of pyrometric cone equivalent (PCE) of softening point (*second revision*).

†Part 2 Determination of refractories under load (*first revision*).

‡Part 8 Determination of apparent porosity (*first revision*).

§Part 4 Determination of cold crushing strength (*first revision*).

‖Part 6 Determination of permanent change after reheating (*first revision*).

7.1.1 The refractories may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors may be obtained from the Indian Standards Institution.

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